

## CLAIMS

1. A method of forming a thin film of vinylidene fluoride homopolymer comprising I-form crystal structure alone or as main component, the method comprises applying, on a substrate, a vinylidene fluoride homopolymer which contains, at one end or both ends thereof, a moiety represented by the formula (1):



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wherein  $R^1$  is a divalent organic group but does not contain a structural unit of the vinylidene fluoride homopolymer;  $n$  is 0 or 1;  $Y$  is a functional group, and has a number average degree of polymerization of vinylidene fluoride homopolymer unit of 3 to 100, to form a thin film of the vinylidene fluoride homopolymer comprising I-form crystal structure alone or as main component.

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2. The method of forming a thin film of Claim 1, wherein in the vinylidene fluoride homopolymers comprising I-form crystal structure alone or as main component, when attention is given to proportions of the respective vinylidene fluoride homopolymers having I-, II- or III-form crystal structure in the thin film of vinylidene fluoride homopolymer which are calculated by IR analysis, the proportion of vinylidene fluoride homopolymers having I-form crystal structure satisfies both of (Equation 1):

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$$100 \geq \text{I-form} / (\text{I-form} + \text{II-form}) > 50 \% \text{ by weight} \quad (\text{Equation 1})$$

and (Equation 2):

$$100 \geq \text{I-form} / (\text{I-form} + \text{III-form}) > 50 \% \text{ by weight} \quad (\text{Equation 2}).$$

- 5                    3. The method of forming a thin film of Claim 1 or 2, wherein Y in the formula (1) is a functional group which can impart, to the vinylidene fluoride homopolymer, adhesion to the substrate of organic material and/or inorganic material.
- 10                   4. The method of forming a thin film of Claim 1 or 2, wherein Y in the formula (1) is a functional group which can make self-organization of vinylidene fluoride homopolymer possible on the surface of the substrate of organic material and/or inorganic material.
- 15                   5. The method of forming a thin film of Claim 1 or 2, wherein Y in the formula (1) is a functional group which can bond vinylidene fluoride homopolymers each other.
- 20                   6. The method of forming a thin film of Claim 4, wherein Y in the formula (1) is  $-\text{CH}=\text{CH}_2$ ,  $-\text{SH}$  and/or  $-\text{SiX}_{3-n}\text{R}^6_n$  (n is 0 or an integer of 1 or 2;  $\text{R}^6$  is  $\text{CH}_3$  or  $\text{C}_2\text{H}_5$ ; X is  $-\text{OR}^7$ ,  $-\text{COOH}$ ,  $-\text{COOR}^7$ ,  $-\text{NH}_{3-m}\text{R}^7_m$ ,  $-\text{OCN}$  or halogen atom ( $\text{R}^7$  is  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$  or  $\text{C}_3\text{H}_7$ , m is 0 or an integer of 1 to 3)).
- 25                   7. The method of forming a thin film of Claim 5, wherein Y in the formula (1) is  $-\text{CH}=\text{CH}_2$ ,  $-\text{OCOCH}=\text{CH}_2$ ,  $-\text{OCOCF}=\text{CH}_2$ ,  $-\text{OCOC}(\text{CH}_3)=\text{CH}_2$  or  $-\text{OCOCCl}=\text{CH}_2$ .

8. A laminated article which has, on a substrate, a self-organized thin film formed by using vinylidene fluoride homopolymers comprising I-form crystal structure alone or as main component and having a number average degree of polymerization of vinylidene fluoride homopolymer unit of 3 to 100.

9. A laminated article which has, on a substrate, a thin film formed by bonding of vinylidene fluoride homopolymers comprising I-form crystal structure alone or as main component and having a number average degree of polymerization of vinylidene fluoride homopolymer unit of 3 to 100.

10. The laminated article of Claim 8 or 9, wherein in the vinylidene fluoride homopolymers comprising I-form crystal structure alone or as main component, when attention is given to proportions of the respective vinylidene fluoride homopolymers having I-, II- or III-form crystal structure in the thin film of vinylidene fluoride homopolymer which are calculated by IR analysis, the proportion of vinylidene fluoride homopolymers having I-form crystal structure satisfies both of (Equation 1):

$$100 \geq \text{I-form} / (\text{I-form} + \text{II-form}) > 50 \% \text{ by weight} \quad (\text{Equation 1})$$

and (Equation 2):

$$100 \geq \text{I-form} / (\text{I-form} + \text{III-form}) > 50 \% \text{ by weight} \quad (\text{Equation 2}).$$

11. The laminated article of Claim 8, wherein the self-organized film formed by using the vinylidene fluoride homopolymers comprising I-form crystal structure alone or as main component is formed by using vinylidene fluoride homopolymers having a number average degree of polymerization of vinylidene fluoride homopolymer unit of 3 to 100 and containing, at one end or both ends thereof, a moiety represented by the formula (1-1):



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wherein  $R^1$  is a divalent organic group but does not contain a structural unit of the vinylidene fluoride homopolymer;  $n$  is 0 or 1;  $Y^1$  is  $-SH$  and/or  $-SiX_{3-n}R^6_n$  ( $n$  is 0 or an integer of 1 or 2;  $R^6$  is  $CH_3$  or  $C_2H_5$ ;  $X$  is  $-OR^7$ ,  $-COOH$ ,  $-COOR^7$ ,  $-NH_{3-m}R^7_m$ ,  $-OCN$  or halogen atom ( $R^7$  is  $CH_3$ ,  $C_2H_5$  or  $C_3H_7$ ,  $m$  is 0 or an integer of 1 to 3)).

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12. The laminated article of Claim 9, wherein the thin film formed by bonding of the vinylidene fluoride homopolymers comprising I-form crystal structure alone or as main component is formed by using vinylidene fluoride homopolymers having a number average degree of polymerization of vinylidene fluoride homopolymer unit of 3 to 100 and containing, at one end or both ends thereof, a moiety represented by the formula (1-2):

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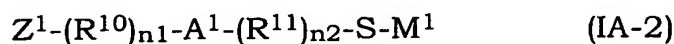


wherein  $R^1$  is a divalent organic group but does not contain a

structural unit of the vinylidene fluoride homopolymer; n is 0 or 1; Y<sup>2</sup> is -CH=CH<sub>2</sub>, -OCOCH=CH<sub>2</sub>, -OCOCF=CH<sub>2</sub>, -OCOC(CH<sub>3</sub>)=CH<sub>2</sub> or -OCOCCL=CH<sub>2</sub>.

5                    13. A ferroelectric device comprising the laminated article of any of Claims 8 to 12.

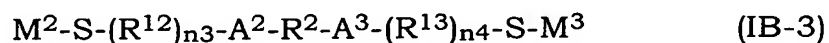
10                    14. A vinylidene fluoride homopolymer represented by the formula (IA-2):



wherein A<sup>1</sup> is a structural unit of vinylidene fluoride homopolymers having a number average degree of polymerization of 3 to 100; Z<sup>1</sup> is a  
15 polyfluoroalkyl group or an alkyl group; R<sup>10</sup> and R<sup>11</sup> are the same or different and each is a divalent organic group but does not contain a vinylidene fluoride homopolymer unit comprising I-form crystal structure alone or as main component; n<sub>1</sub> and n<sub>2</sub> are the same or different and each is 0 or 1; M<sup>1</sup> is hydrogen atom or alkali metal atom.

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15. A vinylidene fluoride homopolymer represented by the formula (IB-3):



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wherein A<sup>2</sup> and A<sup>3</sup> are the same or different and each is a structural unit of vinylidene fluoride homopolymers and a total number average

degree of polymerization of  $A^2$  and  $A^3$  is from 3 to 100;  $R^2$  is a divalent organic group but does not contain a structural unit of the vinylidene fluoride homopolymer;  $R^{12}$  and  $R^{13}$  are the same or different and each is a divalent organic group but does not contain a structural unit of  
5 the vinylidene fluoride homopolymer;  $n_3$  and  $n_4$  are the same or different and each is 0 or 1;  $M^2$  and  $M^3$  are the same or different and each is hydrogen atom or alkali metal atom.